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 ACROSS COMPANIES AND COMPANY
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SYSTEM AND METHOD FOR LEVERAGING PROCUREMENT ACROSS
COMPANIES AND COMPANY GROUPS

Background of the Invention

Cross References to Related Applications

5 The following U.S. patent applications, filed concurrently or otherwise copending, are assigned to the assignee hereof and contain subject matter related, in certain respect, to the subject matter of the present application.

10 Serial No. 09/657,215, filed 7 Sep 2000, entitled "System and Method for Clustering Servers for Performance and Load Balancing", assignee docket END9-2000-0104-US1;

15 Serial No. 09/657,216, filed 7 Sep 2000, entitled "System and Method for Front End Business Logic and Validation", assignee docket END9-2000-0105-US1;

Serial No. 09/657,217, filed 7 Sep 2000, entitled "System and Method for Data Transfer With Respect to External Applications", assignee docket END9-2000-0106-US1;

Serial No. 09/656,037, filed 7 Sep 2000, entitled "System
and Method for Providing a Relational Database Backend",
assignee docket END9-2000-0107-US1;

5 Serial No. 09/656,803, filed 7 Sep 2000, entitled "System
and Method for Providing a Role Table GUI via Company
Group", assignee docket END9-2000-0108-US1;

Serial No. 09/656,967, filed 7 Sep 2000, entitled "System
and Method for Populating HTML Forms Using Relational
Database Agents", assignee docket END9-2000-0109-US1;

10 Serial No. 09/657,196, filed 7 Sep 2000, entitled "System
and Method for Catalog Administration Using Supplier
Provided Flat Files", assignee docket END9-2000-0110-US1;
and

15 Serial No. 09/657,195, filed 7 Sep 2000, entitled "System
and Method for Providing an Application Navigator Client
Menu Side Bar", assignee docket END9-2000-0111-US1.

Serial No. 09/_____, entitled "SYSTEM AND METHOD FOR
AUTOMATING INVOICE PROCESSING WITH POSITIVE CONFIRMATION",
assignee docket number END9 2000 0165 US1.

Serial No. 09/_____, entitled "SYSTEM AND METHOD FOR
GENERATING A COMPANY GROUP USER PROFILE", assignee docket
number END9 2000 0166 US1.

5 Serial No. 09/_____, entitled "SYSTEM AND METHOD FOR
SHARING DATA ACROSS FRAMES USING ENVIRONMENT VARIABLES ",
assignee docket number END9 2000 0167 US1.

Serial No. 09/_____, entitled "SYSTEM AND METHOD FOR
SYNCHRONIZING LEDGER ACCOUNTS BY COMPANY GROUP", assignee
docket number END9 2000 0168 US1.

10 Serial No. 09/_____, entitled "SYSTEM AND METHOD FOR
GROUPING COMPANIES ACCORDING TO ACCOUNTING SYSTEM OR RULES",
assignee docket number END9 2000 0169 US1.

15 Serial No. 09/_____, entitled "SYSTEM AND METHOD FOR FRAME
STORAGE OF EXECUTABLE CODE", assignee docket number END9
2000 0174 US1.

Serial No. 09/_____, entitled "SYSTEM AND METHOD FOR
INVOICE IMAGING THROUGH NEGATIVE CONFIRMATION PROCESS",
assignee docket number END9 2000 0175 US1.

Serial No. 09/_____, entitled "SYSTEM AND METHOD FOR
END9 2000 0176 US1

PROCESSING TAX CODES BY COMPANY GROUP", assignee docket number END9 2000 0177 US1.

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Serial No. 09 _____, filed 2 March 2001, entitled "SYSTEM AND METHOD FOR MANAGING INTERNET TRADING NETWORKS", assignee 5 docket number END9 2000 0178 US1.

The above-identified patent applications are incorporated herein by reference.

Technical Field of the Invention

This invention pertains to a requisition and catalog system. More particularly, it relates to a leveraged procurement network (LPN) system for leveraging purchasing across company and company groups.
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Background Art

Previously, an enterprise company provided procurement services to a customer company. The back end system for supporting these procurement services is bridged to a front end requisition and catalog system (Req/Cat Web, or RCW server) with which users from the customer company would interface to view a catalog of commodities and/or services
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and enter requisition requests.

Sub A2 When the enterprise company provides such procurement services to more than one customer company, it has heretofore been required to rewrite the front end system to accommodate the accounting rules required to support the procurement activities of each additional companies. This is time consuming and complex. There is, therefore, a need in the art to provide a system and method whereby an enterprise may provide procurement services to a plurality of customer companies using the same front end requisition and catalog system for them all.

However, the data and accounting for one customer company must be isolated from viewing or use by other customer companies.

The Internet provides exchange mechanisms where suppliers bring goods and services to be offered and malls for shoppers to obtain them. These exchange mechanisms are largely independent with a single company selling and an individual from another company shopping. Generally, if companies wish to partner to gain advantage either from consolidating purchase volumes to obtain better prices or from creating a complete palette of business goods and

services to establish a 'one stop shop', many individual relations are established and managed independently. Manual integration of systems to ensure members rights and responsibilities are met increase the bureaucracy and paperwork. Should a company endeavor to participate or host multiple trading networks, the membership management becomes very difficult.

There is, therefore, a need in the art for a system and method whereby an enterprise may leverage purchases by a plurality of customer companies for which it is providing procurement services against a common contract having volume specific terms and conditions.

It is an object of the invention to provide an improved system and method for procuring goods and services on behalf of customer companies.

It is a further object of the invention to provide a system and method for leveraging purchases of goods and services against the same volume specific contract by a plurality of unrelated customer companies.

It is a further object of the invention to provide a system and method for providing procurement services to a

plurality of companies organized according to groups of related companies sharing access to selected resources across company groups and access to other resources only within company groups.

5 It is a further object of the invention to provide a system and method for leveraging purchasing across company groups while isolating information to individual company groups.

Summary of the Invention

10 A system and method for providing procurement services to a plurality of customer companies, the method including the steps of establishing a user profile for each person authorized by a customer company to access procurement services; associating each company with a company group of related companies; the user profile specifying for each user a user company and company group; providing for each procurement resource to be shared among users a resource profile specifying for each resource those companies to have access to the procurement resource; and responsive to the

user profile and resource profiles, controlling user access to the procurement resources.

In accordance with an aspect of the invention, there is provided a computer program product configured to be operable for providing procurement services to a plurality of customer companies.

Other features and advantages of this invention will become apparent from the following detailed description of the presently preferred embodiment of the invention, taken in conjunction with the accompanying drawings.

Brief Description of the Drawings

Figure 1 is a high level system diagram illustrating an enterprise system for providing procurement services with respect to a plurality of vendors on behalf of a plurality of company groups of related customer companies in accordance with the preferred embodiment of the invention.

Figure 2 is a high level system diagram illustrating the LPN application architecture of the preferred embodiment

of the invention.

Figure 3 is a diagram illustrating the inputs and outputs of the customer requisition catalog (RCW) component of the architecture of Figure 2.

5 Figure 4 is a diagram illustrating, inter alia, the inputs and outputs of the enterprise EDI translator 44 of the architecture of Figure 2.

10 Figure 5 is a diagram illustrating the inputs and outputs of the enterprise procurement services system 42 of the architecture of Figure 2.

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15 ^{a3} Figure 6 is a diagram illustrating the inputs and outputs of the enterprise procurement services hub server of the architecture of Figure 2.

Figure 7 is a diagram illustrating the use of user profiles and resource and process profiles in accordance with the preferred embodiment of the invention.

Figure 8 is a diagram illustrating the creation and maintenance of a user profile.

Figure 9 is a diagram illustrating the content of a user profile.

Figure 10 is a diagram illustrating the content of a resource or process profile.

5 Figure 11 is a diagram illustrating the content of a catalog.

Figure 12 is a diagram illustrating the leveraging of contract purchases across company groups.

10 **Best Mode for Carrying Out the Invention**

In accordance with the preferred embodiments of the invention, a front end order system, such as a procurement catalog and requisition system, is enabled to accommodate multiple business with complex accounting rules while providing secure information viewing in support of those businesses and their processes. Companies having common ownership, and therefore similar accounting systems, are grouped in procurement coalitions for volume discounts or access to shared contracts. Such contracts and other

resources may also be leveraged across company groups.

Referring to Figure 1, the procurement services organization of an enterprise 244 provides procurement services to a plurality of companies 248, 249 organized in a plurality of company groups 241-243 with respect to a plurality of vendors 245-247.

Referring to Figure 2, the architecture of system components administered by enterprise 244 includes a customer requisition and catalog (ReqCatWeb, or RCW) system 40, an enterprise procurement services system (SAP) 42, an enterprise data interchange, or EDI translator system 44, an enterprise (LPN) hosted data warehouse 50, an enterprise procurement hub server 52. Also illustrated in Figure 2 are a customer requester web terminal 46 and vendors 48.

ReqCatWeb 40 is a front-end interface between the user and the procurement system, providing access to catalogs and commodities, to order the day-to-day items required for the business.

SAP 42 is the back-end purchasing engine of the enterprise, such as is supported by IBM, accepting the requisitions from the front-end ReqCatWeb 40, and generating

EDI transactions, as well as the accounting transactions for the requisitions, etc.

EDI (Electronic Data Interchange) 44 is an application that interacts with suppliers by sending standardized transactions for purchase orders, receiving invoices, etc.

LPN Hosted DataWarehouse 50 is a data-warehouse facility for storing all transactions that occur in the system; used as a tool for monitoring transactions and gathering statistics.

Hub Server 52 is a back-end processing server for transferring data between elements (that is, servers) of the system.

Customer ERP System 54 is a back-end purchasing system as supported by the customer.

Referring to Figure 3, the inputs to customer RCW system 40 from procurement services system 42 include requisition status 41, purchase order (PO) status and contracts 43, cost centers 45, currency exchange rates 47, general ledger (G/L) accounts 49, PO history invoices 53, PO history receipts 55, and confirmations 56. The outputs from

customer RCW system 40 to procurement services system 42 include requisitions 51 and positive confirmation responses 57.

The inputs to customer RCW system 40 from a customer requester browser 46 include submit requisition, and outputs from system 40 to browser 46 include approval/rejection notice 62, status display 63, and negative/positive/INR confirmation. Notice and response data 65 is exchanged between RCW system 40 and browser 46.

Other inputs to RCW system 40 include vendor catalogs 73 from vendors 245-247 via enterprise EDI translator 44, postal code validation data 74 from an enterprise RCW system (not shown), and human resource extract data 70 from enterprise hub server 52. RCW system 40 also provides approval notices 72 and receives approve/reject data 71 with respect to customer approvers.

Referring to Figure 4, enterprise procurement services system 42 receives as inputs from customer RCW system 40 requisitions 51 and positive confirmation responses 57, and provides to customer RCW system 40 requisition status data, purchase order status and contracts data 43, cost center data 45, currency exchange rates 47, G/L accounts 49, PO

history invoices 53, PO history receipts 55, and confirmations 56.

Inputs to procurement services system 42 from hub server 52 include cost center data 79, and outputs to hub server 52 include BDW extracts, company process control table 76, vendor master updates 77, and accounting detail 78.

Inputs to procurement services system 42 from enterprise EDI translator 44 include IDOC PO acknowledgment 88, IDOC invoices 89, IDOC payment status 92 and file transfer check reconstruction 93. Outputs to EDI translator include IDOC PO 87, IDOC invoice rejection 90 and IDOC payments 91.

Inputs to enterprise procurement services system 42 from SAP operator terminals include process PO's, RFQ, and contracts data 81, create/change vendor master data 82, invoice processing 83 (which is one input to a general procurement invoicing function within procurement services system 42), payment proposal data 84, and payment post and print 85. Also input to procurement services system 42 is currency exchange rate data 80 from an external financial services server (not shown) via an enterprise currency

exchange rates server (not shown), and output from procurement services system 42 to vendors 48 are paper or fax PO documents 86.

Referring to Figure 5, inputs to enterprise EDI translator 44 from procurement services system 42 include IDOC PO 87 and IDOC invoice reject 90, and outputs to SAP system 42 include IDOC PO acknowledge 88, IDOC invoice 89, IDOC payments 91, IDOC payment status 92 and file transfer check reconstruction 93.

Inputs to enterprise EDI translator 44 from vendor 48 include PO acknowledge 95 and invoice 96, and outputs to vendor 48 include purchase order 94 and invoice reject 97. EDI translator also receives payments 32 from source 32 and provides payments to customer EDI translator 30. Bank 32 provides cashed checks and payment status to EDI translator 44. Vendor 48 provides goods shipments 35 to customer receiving 34, and receives back goods returns 36. Vendor 48 receives paper or fax purchasing documents 37 from SAP 42, and provides paper invoices 38 to enterprise accounts payable for invoice processing 83 at SAP 42.

Referring to Figure 6, enterprise procurement services hub server 52 receives as inputs from procurement system 42

BDW extracts 75, company process control table 76, vendor master updates 77 and accounting detail 78, and provides cost centers data 79 (which it receives from customer ERP system 54.) Hub server 52 provides human resource extract 5 data 70, extracted from customer employee data 60, to customer RCW system 40.

Hub server 52 provides to customer ERP system 54 vendor master data 26, invoice detail 27, payment detail 28 and blank clearing detail data 29, and receives cost centers data 25. Customer ERP system 54 also receives goods receipts 66 from customer receiving 34.

Hub server 52 provides BDW extracts 58 to data warehouse 50.

sub a The operation and inter relationships of elements of the architecture of Figures 2-b6 pertinent to the present invention will be described hereafter in connection with preferred and exemplary embodiments of the systems and methods of the invention.

In accordance with the preferred embodiments of the invention, a front end order system, such as a procurement catalog and requisition system 40, is rendered enabled to

accommodate multiple businesses 248, 249 with complex accounting rules while providing secure information viewing in support of those businesses and their processes.

5 Companies having common ownership, and therefore similar accounting systems, are grouped in procurement coalitions 242 for volume discounts and access to shared contracts. Procurement contracts may also be leveraged across company groups 243, 242.

10 Both leveraging access and maintaining isolation of data is done by identifying a user at log on as associated with a company group. That association then dictates what the user can see and do.

15 With respect to catalogs, for example, a vendor sends his catalog in across the firewall to the EDI electronic data interchange. The RCW application loads it into the catalog. Users can come in to RCW, authorized by their user profile, from several company groups using common catalog -- none knowing that the other uses it or has access to knowledge of requisitions applied against its line items.

20 SAP assembles requisitions from all these users, and cuts purchase orders periodically for those requisitions from the same company group. By identifying those requisitions to a particular contract, volume specific terms and conditions,

for example, are leverage on behalf of the companies and company groups. Catalogs are, in the preferred embodiment, controlled at the company level because this allows easier support of regional catalogs.

5 With respect to accounting, by driving accounting by company group, a user in one company within the company group may, for example, charge purchase to a user account in another company within the same company group.

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as) Referring to Figure 7, the system of the preferred embodiment of the invention includes a plurality of companies 450-452 are associated in company groups 242 and 243, requisition and catalog system 40, and procurement services system (SAP) 42. Associated with this system is a data interchange system 44, one of several possible communication paths with a plurality of vendors 246, 247. A company group may include one or more companies. Data interchange system 44 includes mail boxes 455, 456.

Users 450-452 are persons authorized by their respective companies to access requisition and catalog system 40. Requisition and catalog system 40 includes a user profile table 384 and a plurality of resources, shown here as catalogs 465, 476 and contract 469. Other examples

of such resources include cost centers (that is, departments
that can be charged), general ledger (G/L) account codes
(that is, chart of accounts (COA)), user profile table 384
entries, business rules and defaults (such as those
5 affiliated with accounting, specifying the fields that must
be completed, for example, in creating a requisition and
default data to be entered in those fields). All of these
are generically referred to as procurement resources, and
include process requirements and data resources accessible
10 only to those users identified in their profiles as members
of a particular company and, therefore, company group. (A
company code will have a company group code associated with
it.)

Referring to Figure 9, user profile 384 includes, for
15 each user, company group code, company code, plant code
(that is, ship to location), employee serial number, E-mail
address, and much more (not pertinent to the present
invention.)

Referring to Figure 8, an exemplary system for creating
20 and maintaining user profile table 384 is shown. A
plurality of related companies 59, 59A are connected to a
hub server which includes a company group human resources
file. Hub server is connected through fire wall 372 to a

requisition and catalog (ReqCatWeb, or RCW) application server 376. RCW server 374 includes a company group HR file, a staging table build application 378 and a new employee profile build application 382 for building employee profile table 384. Applications 402, 404 are logically connected to database server 388, which includes staging table 380, user profile table 384, and plant code table 386.

Connected to an RCW web server 390 deployed to customer companies through extra net 394 is a browser operable by a user for accessing a catalog (not shown) maintained by the enterprise, and for submitting to the enterprise requisitions for purchase of commodities and services against the accounts of a customer company. In exemplary embodiment, extra net 394 may be a secure network, such as a frame relay network connection, or a secure protocol on the world wide web.

sub a The method for creating and maintaining user profile table 384 is further described in copending application S/N _____, assignee docket END9 2000 0166 US1.

Referring to Figure 10 in connection with Figure 7, associated with each company group resource 465, 467, 469 is
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a resource profile 466, 468, 470, respectively, containing a list, in the case of a catalog profile 466, of those companies, each associated with a company group, authorized to access catalog 465. This list may be maintained also at 5 an item 471, 472 level.

As a user 451 logs in, his profile 461 code fields 482 and 481, respectively, will associate him with a given company 248 in a company group 242. When he clicks on shop-from-a-catalog button on his browser, catalog application code displays only those catalogs 465, 467 for which the profile 466, 468 includes his company in list 487 (this is at company level).
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Subj a1 Other data that is similarly protected (other than catalogs), for example, include contracts 469, cost centers (departments that can be charged -- a user can charge across companies 248, 249 in a company group, but not across company groups 243, 242), user profiles 384 (a user 451 may be able to initiate requests for other users 452 -- using button "change requester", which will bring up people in his company group, if configured to allow it.) More of examples 15 of resources protected by resource profiles 465 are accounting GL accounts codes that are associated with commodity codes by company group. Business rules associated
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with that accounting that are company group specific -- and include accounting business rule defaults, such as fields required to be filled out based on what is being bought.

5 A given catalog 465 may, as controlled by catalog profile 466, be associated with more than one company within more than one company group. Business rules may require a user in a particular company group to buy from a particular catalog or catalogs, and such user will only see those catalogs associated with his company group. Information and resources are isolated to users by company group by associating company group with each data item that exists in the various data files and code procedures (for which such isolation is required).

10 15 Vendors 246, 247 may transmit catalog information to their respective catalogs 467, 469 via EDI mailbox 455.

Req/Cat Web server 40 assembles requisitions from users in all company groups and transfers these to procurement services system 42, which issues purchase orders to vendors 246, 247 for orders against their catalog. Invoices back from vendors 246, 247 are sent, in this example, back to SAP 42 via EDI 44 mailbox 456.

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Referring to Figure 12, the manner in which purchases from users in different company groups are leveraged to achieve volume related costs with respect to leveraged contract 480 is described. As is represented by lines 61, 5 users 450, 451 from different company groups may, in accordance with user profiles and catalog profile 466, as previously discussed, issue requisition requests against the same line item 471 in catalog 465. Other requests may be entered with respect of other items 472. These requisition requests are transferred, as represented by lines 51, to SAP 10 42. SAP 42 periodically (say, hourly or daily) cuts purchase orders 474, 475 to vendor 246, with separate purchase orders for requisition requests from each company group. Invoices 478, 479 are returned to SAP 42 and bridged to RCW 40 for confirmation processing prior to payment.

Negative or positive confirmation processing is executed by Req/Cat Web server, as is more fully described in copending application S/N's _____ and _____, assignee 15 dockets END9 2000 0165 US1 and END9 2000 0175 US1, respectively, with separate confirmation requests sent to users in different company groups -- this, again, providing information segregation and protection. However, volume commitments against contract 480 are leveraged by purchase orders from all company groups having access to items in vendor 246 catalog 465.

Similarly, buys against contract 469 (for example, a blanket purchase order for services from a vendor 247) may be leveraged by company group.

In this way, the preferred embodiments of the invention isolate information and processing required across multiple company groups by using profiles (user profile and resource and process profiles such as contract and catalog profiles). There is a profile provided for every element, resource, procedure, data, line item, G/L account -- everything of any kind for which leveraging and isolation is to be achieved across company groups.

Advantages over the Prior Art

It is an advantage of the invention that there is provided an improved system and method for procuring goods and services on behalf of customer companies.

It is a further advantage of the invention that there is provided a system and method for leveraging purchases of goods and services against the same volume specific contract by a plurality of unrelated customer companies.

It is a further advantage of the invention that there
is provided a system and method for providing procurement
services to a plurality of companies organized according to
groups of related companies sharing access to selected
5 resources across company groups and access to other
resources only within company groups.

It is a further advantage of the invention that there
is provided a system and method for leveraging purchasing
across company groups while isolating information to
10 individual company groups.

Alternative Embodiments

It will be appreciated that, although specific
embodiments of the invention have been described herein for
purposes of illustration, various modifications may be made
15 without departing from the spirit and scope of the
invention. In particular, it is within the scope of the
invention to provide a computer program product or program
element, or a program storage or memory device such as a
solid or fluid transmission medium, magnetic or optical
20 wire, tape or disc, or the like, for storing signals

readable by a machine, for controlling the operation of a computer according to the method of the invention and/or to structure its components in accordance with the system of the invention.

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Further, each step of the method may be executed on any general computer, such as an IBM System 390, AS/400, PC or the like and pursuant to one or more, or a part of one or more, program elements, modules or objects generated from any programming language, such as C++, Java, Java Script, P1/1, Fortran or the like. And still further, each said step, or a file or object or the like implementing each said step, may be executed by special purpose hardware or a circuit module designed for that purpose.

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Accordingly, the scope of protection of this invention is limited only by the following claims and their equivalents.